Gulfco Marine Maintenance Superfund Site (Site)

Comments:

1. (Page 2, 5th paragraph): The letter proposes that if the sediment is less than 2 inches thick at a sampling location, then a sediment sample will not be collected there. Previous sediment sampling experience in the Intracoastal Waterway near the site found areas that varied from completely scoured (no soft sediment) to thicker sediment layers. In some areas, it was necessary to make several attempts to collect the necessary sample volume. This proposed modification to the RI/FS Workplan is not approved, and, in cases where sufficient sediment samples volume cannot be obtained at the planned location, then additional attempts to collect a sample shall be made. Four additional attempts shall be made to collect the sediment sample within 50 feet of the proposed location, unless an adequate sample can be collected with fewer attempts. If after the four additional attempts have been made an adequate sample cannot be recovered, then no sample at that location will be required, and the lateral extent of sediment at that location will have been defined.

2. (Page 3, Fish Tissue Investigation): The letter proposed alternative sediment Preliminary Screening Values (PSVs) instead of the approach included in the approved RI/FS Workplan. According to the letter, these alternative PSVs are conservative screening values developed from TCEQ guidance on determining sediment screening levels, from the fate and transport model in EPA's guidance on risk assessment for hazardous waste combustion facilities, and measured biota sediment accumulation factors from the Calcasieu Estuary for chemicals without accumulation factors in the guidance. The proposed modification to the sediment PSVs would result in no fish and crab tissue sampling, and is not approved for reasons including the following:

   a. The proposed alternative PSVs are calculated with a default fish ingestion rate of 0.015 kg/day, which is the default proposed in the TCEQ guidance. However, the TCEQ guidance states that the default ingestion rate roughly corresponds with two fish meals per month, and acknowledges that local differences in fish consumption rates may warrant the use of amounts that differ from the default. Also, the TCEQ guidance states that the Texas Department of Health uses an assumed fish ingestion rate that is twice as high, or 0.030 kg/day. The result of using the Texas Department of Health default instead of the proposed value would be to reduce the proposed alternative PSVs by one half. Because the purpose of the screens is to decide whether or not

additional data is needed (i.e., fish and crab sampling), the PSVs should be on the conservative side (i.e., lower numbers) so that potential contamination pathways are not overlooked.

b. The proposed screening factors are calculated with a carcinogenic risk level of 1×10^{-5}, which is the default parameter in the TCEQ guidance for a single contaminant. Table 4 in the letter identifies a number of compounds detected in the sediment including both carcinogenic and non-carcinogenic compounds. The TCEQ guidance acknowledges that the impact of multiple chemicals may result in the need to lower the PSVs to meet the cumulative risk level. The proposed alternative PSVs proposal does not address the impact of multiple contaminants in the sediment, nor does it address the cumulative exposure to contaminants in other environmental media that may be present. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) Final Rule (Federal Register Vol. 55, No 46, page 8666, March 8, 1990) also recognizes the potential impact of multiple chemicals in multiple media. According to the NCP a carcinogenic risk level of 1×10^{-6} "shall be used as the point of departure for determining remediation goals for alternatives when ARARs are not available or are not sufficiently protective because of the presence of multiple contaminants at a site or multiple pathways of exposure." The Final Rule also states that the point of departure represents a level from which analysis should begin. The result of using the 1×10^{-6} risk level instead of the proposed value would be to reduce the proposed alternative carcinogenic PSVs by a factor of ten, or an order of magnitude. Because the purpose of the screens is to decide whether or not additional data is needed (i.e., fish and crab sampling), the PSVs should be on the conservative side (i.e., lower numbers) so that potential contamination pathways are not overlooked.

c. The proposed alternative PSVs are calculated with a factor for the "fraction of organic carbon in bottom sediment" of 0.04, a default value obtained from the EPA guidance on combustion. Subsequent to the submittal of the September 18, 2006, letter, you identified Site-specific total organic carbon data. The average organic carbon concentration in Site and background sediment samples was 0.0015. This Site-specific value shall be used in the alternative PSVs.

d. The letter stated that the proposed biota-sediment accumulation factors (BSAF) were based on chemical properties from the database with EPA's "Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities" when available. However, the chemical properties listed in the letter were generally not those included in that database. Conservative BSAF factors are available from various literature sources and were used in the attached table.

e. Using the same calculation method as described in your letter, but with the factors revised as described above, Table 4 from the letter has been modified as shown in the attached table.

3. (Table 4): The table includes a determination of whether a chemical is bioaccumulative. Antimony, arsenic, beryllium, chromium, lead, silver, and 2-methylnaphthalene are not identified as bioaccumulative chemicals. These chemicals are considered to be bioaccumulative by EPA and shall be identified as such.

In summary, the proposed alternative PSVs are not based on site data, but instead are based on an alternative set of assumptions and default values. The proposed alternative PSVs would preclude the collection of site data to make a risk determination, which could result in overlooking a potential contamination pathway. Use of the proposed alternative PSVs is not approved, and work shall proceed in accordance with the previously approved workplan to collect fish and crab samples and perform analysis for the chemicals shown in the attached table that exceed the PSVs and are above background. The required analyses include: lead, silver, 4,4-DDE, 4,4-DDT, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, hexachlorobenzene, and indeno(1,2,3-cd)pyrene. The previously approved workplan is hereby modified in accordance with these comments.

Gulfco - Calculation of Sediment Preliminary Screening Values Protective of Human Health (fish ingestion)

Target Risk Level:	1.0E-06	NCP, multiple chemicals & pathways
Body Weight (kg):	70	
Target Hazard Quotient:	1	
Ingestion Rate (kg/day):	0.03	(Texas Dept. of Health)
Exposure Frequency (days/year):	350	
Exposure Duration (years):	30	
Averaging Time (carcinogen) (days):	2.56E+04	(365 days times 70 years)
Averaging Time (non-carcinogen) (days):	1.10E+04	(365 days times 30 years)
Fraction of Organic Carbon in Sediment:	1.50E-03	Gulfco Site measurements
Fraction of Lipids in Fish & Crab:	7.00E-02	EPA Region 6 Guidance on lipids & fish (EPA, 1998)
BSAF: biota-sediment accumulation factors, chemical specific (unitless)		

RBEL for carcinogens (mg/kg): (RL x BW x ATc) / (SFo x IF x EF x ED)
RBEL for non-carcinogens (mg/kg): (HQ X BW X RFDo X ATnc) / (IR X EF X ED)

Screening Value (organics): (RBEL X OCsed) / (Lipid x BSAF)
Screening Value (metals): (RBEL) / (BSAF)

a	b	c	d	e	f	g	h	
Compound	**Maximum Site Sediment Concentration (mg/kg)**	**Detected Background Sediment Concentration[1] (mg/kg)**	**Chemical Hazard Index for Site Releases**	**Sediment Screening Value (mg/kg)**	**Cancer Slope Factor Oral (mg/kg-day)**	**Reference Dose Oral (mg/kg-day)**	**BSAF (unitless)**	**Is Fish/Crab Analysis Required?**
antimony	8.14E+00	7.33E+00	na-below background on a statistical basis	3.37E+00		4.00E-04	2.90E-01	No - below background
arsenic	7.62E+00	9.62E+00	na-below background	2.34E-02	1.50E+00	3.00E-04	1.62E-01	No - below background
beryllium	8.20E-01	1.32E+00	na-below background	2.57E+01		2.00E-03	1.90E-01	No - below background
chromium	1.44E+01	2.25E+01	na-below background	1.75E+05		1.50E+00	2.10E-02	No - below background
copper	1.26E+01	1.68E+01	na-below background	9.78E+01		4.00E-02	1.00E+00	No - below background
lead[2]	3.23E+01	1.45E+01	60.2	3.41E-01	8.50E-03	4.30E-04	1.96E+00	**Yes - concentration exceeds screen & background**
mercury	3.60E-02	3.00E-02	0.55	6.51E-02		8.60E-05	3.23E+00	No - concentration below screen
nickel	1.67E+01	2.73E+01	na-below background	9.05E+02		2.00E-02	5.40E-02	No - below background
silver	5.40E-01	0	48.6	1.11E-02		5.00E-03	1.10E+03	**Yes - concentration exceeds screen & background**
zinc	9.26E+01	5.41E+01	0.14	6.43E+02		3.00E-01	1.14E+00	No - concentration below screen
chlordane, gamma	8.30E-04	0	0.00	0.001*	3.50E-01	5.00E-01	4.25E+01	No - concentration below screen
4,4 DDE	5.41E-04	0	na-carcinogen	5.01E-06	3.40E-01		7.16E+01	**Yes - concentration exceeds screen & background**
4,4 DDT	3.32E-03	5.70E-04	0.07	6.18E-04	3.40E-01	5.00E-04	5.80E-01	**Yes - concentration exceeds screen & background**
acenaphthene	7.22E-02	0	0.01	6.35E+00		6.00E-02	4.95E-01	No - concentration below screen
anthracene	1.07E-01	0	0.00	1.87E+02		3.00E-01	8.40E-02	No - concentration below screen
benzo(a)pyrene	6.34E-01	0	na-carcinogen	2.53E-05	7.30E+00		6.60E-01	**Yes - concentration exceeds screen & background**

Gulfco - Calculation of Sediment Preliminary Screening Values Protective of Human Health (fish ingestion)

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Body Weight (kg):	70	
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benzo(a)anthracene	5.41E-01	0	na-carcinogen	2.53E-04	7.31E-01		6.60E-01	**Yes - concentration exceeds screen & background**
benzo(b)fluoranthene	6.11E-01	3.69E-02	na-carcinogen	2.53E-04	7.30E-01		6.60E-01	**Yes - concentration exceeds screen & background**
benzo(g,h,i)perylene	5.09E-01	0	0.21	2.38E+00		3.00E-02	6.60E-01	No - concentration below screen
benzo(k)fluoranthene	5.66E-01	0	na-carcinogen	2.53E-03	7.30E-02		6.60E-01	**Yes - concentration exceeds screen & background**
chrysene	6.53E-01	0	na-carcinogen	2.53E-02	7.30E-03		6.60E-01	**Yes - concentration exceeds screen & background**
dibenzo(a,h)anthracene	2.35E-01	0	na-carcinogen	2.53E-05	7.30E+00		6.60E-01	**Yes - concentration exceeds screen & background**
fluoranthene	9.08E-01	0	0.29	3.17E+00		4.00E-02	6.60E-01	No - concentration below screen
fluorene	6.77E-02	0	0.02	4.23E+00		4.00E-02	4.95E-01	No - concentration below screen
hexachlorobenzene	3.19E-02	0	0.50	1.15E-04	1.60E+00	8.00E-04	6.60E-01	**Yes - concentration exceeds screen & background**
indeno(1,2,3-cd)pyrene	7.70E-01	0	na-carcinogen	2.53E-04	7.30E-01		6.60E-01	**Yes - concentration exceeds screen & background**
methyl naphthalene, 2-	2.89E-02	0	0.64	4.51E-02		4.00E-03	4.65E+00	No - concentration below screen
phenanthrene	6.91E-01	0	0.22	3.17E+00		3.00E-02	4.95E-01	No - concentration below screen
pyrene	1.01E+00	0	0.42	2.38E+00		3.00E-02	6.60E-01	No - concentration below screen
		Total HQ =	112					

[1] A background sample concentration of 0 indicates that the chemical was not detected

[2] Lead slope factor and reference dose from "Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities"; Final (EPA, 9/2005); used for scr

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* Sediment screening level is calculated from the US FDA Action Level (Sec 575.100) of 0.3 ppm chlordane in fish (edible portion) instead of RBEL